FIG. 1

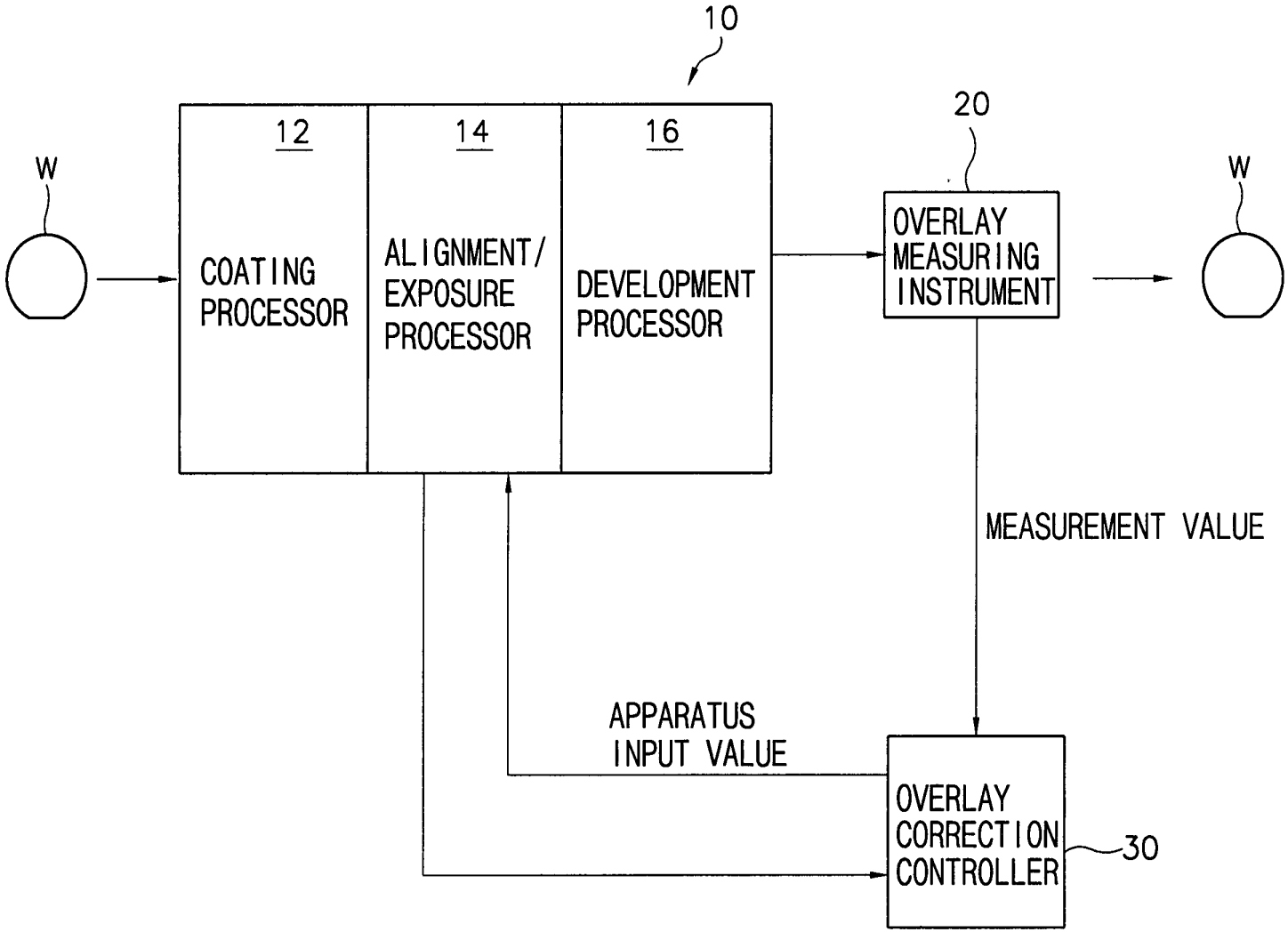

10
12
14
16
20
W
W
COATING PROCESSOR
ALIGNMENT/ EXPOSURE PROCESSOR
DEVELOPMENT PROCESSOR
OVERLAY MEASURING INSTRUMENT
MEASUREMENT VALUE
APPARATUS INPUT VALUE
OVERLAY CORRECTION CONTROLLER
30

FIG. 2

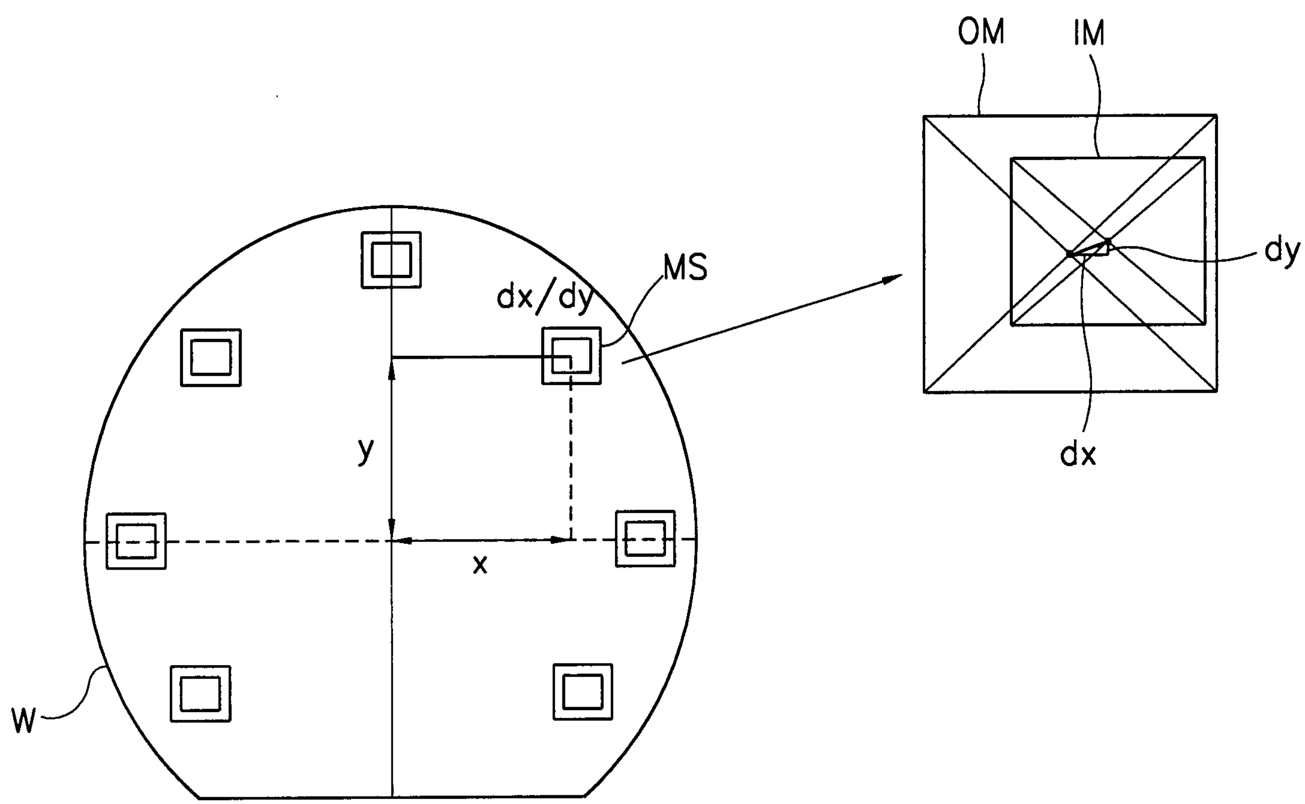


FIG. 3

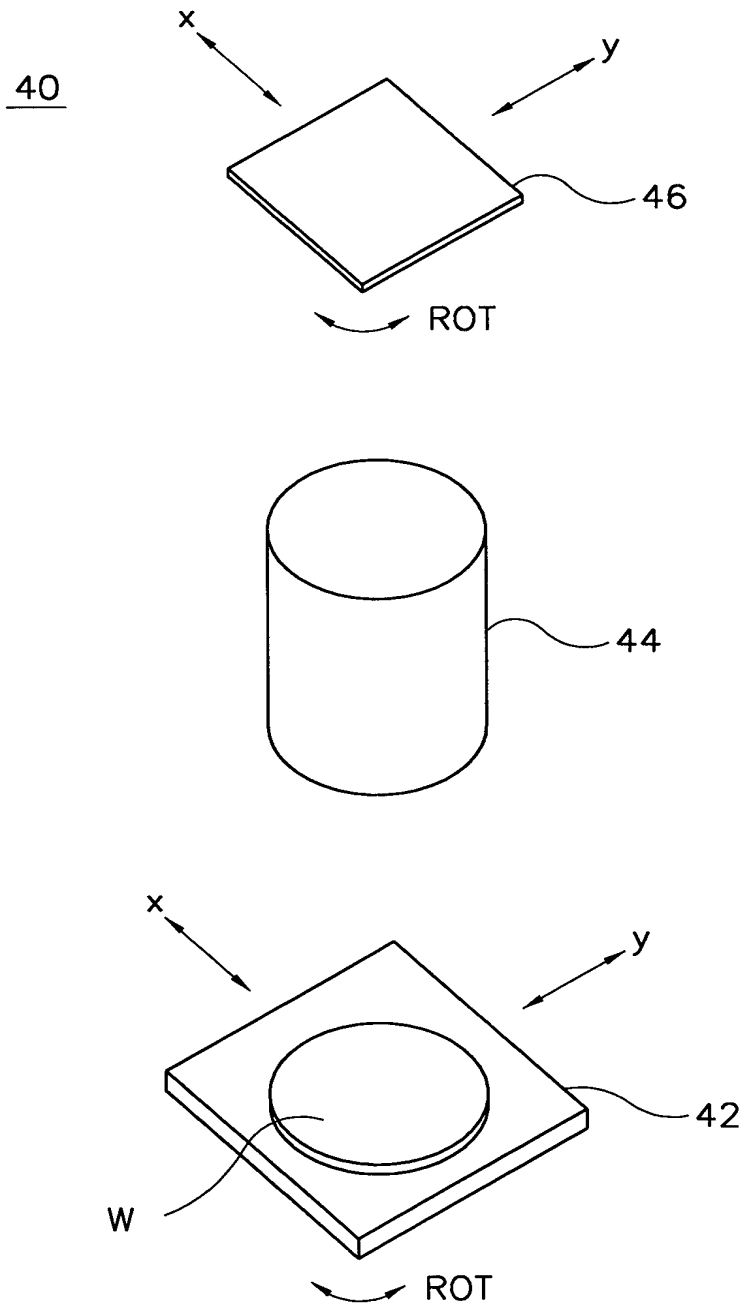


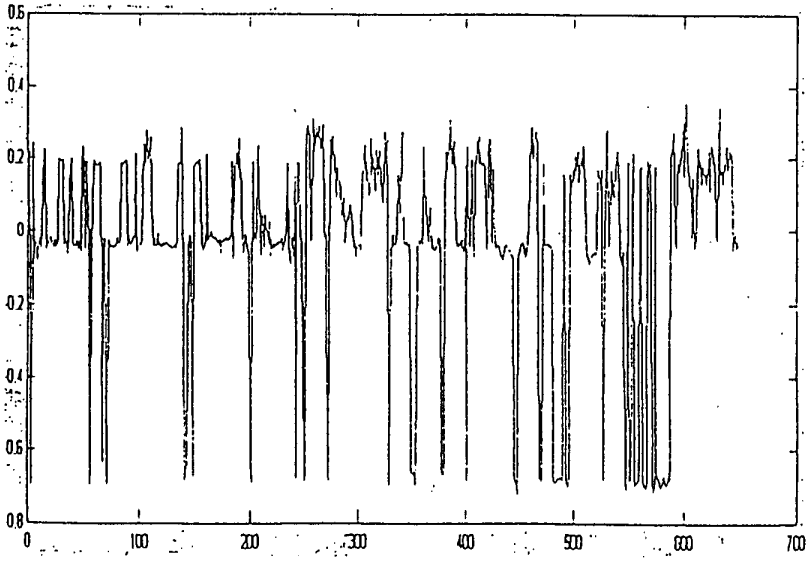
FIG. 4

MEASURING TIME
LOT ID
OF-X
OF-Y
SC-X
SC-Y
ORT
W-ROT
RED-X
RED-Y
ROT-X
ROT-Y

FIG. 5

GENERATING TIME			
LOT ID			
FWD OF-X	RET OF-X	NN OF-X	IN OF-X
OF-Y	OF-Y	OF-Y	OF-Y
SC-X	SC-X	SC-X	SC-X
SC-Y	SC-Y	SC-Y	SC-Y
ORT	ORT	ORT	ORT
W-ROT	W-ROT	W-ROT	W-ROT
RED-X	RED	RED	RED
RED-Y			
ROT-X	ROT	ROT	ROT
ROT-Y			

FIG. 6



CORRECTION APPARATUS INPUT (TIME SEQUENCE)

FIG. 7

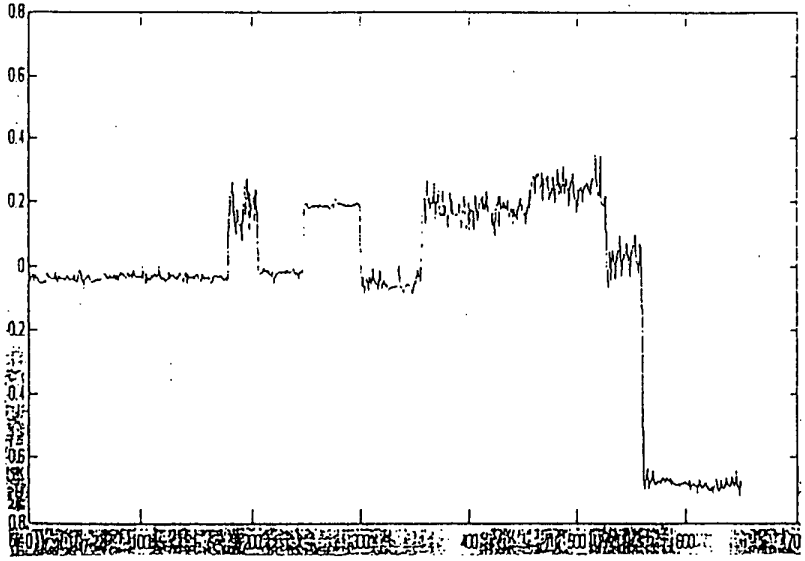
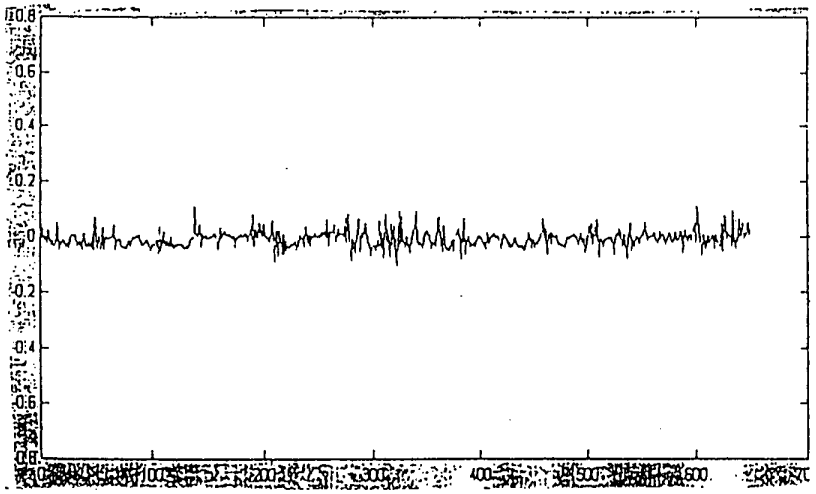
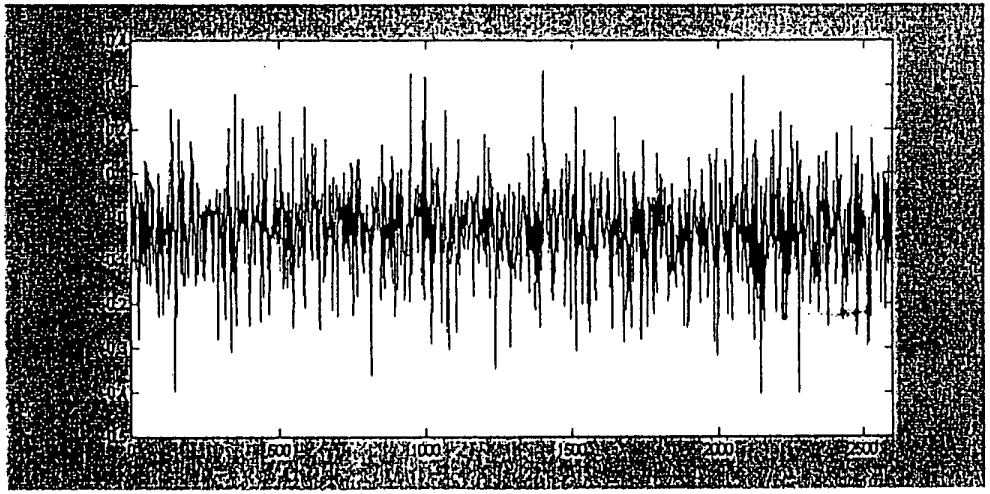


FIG. 8



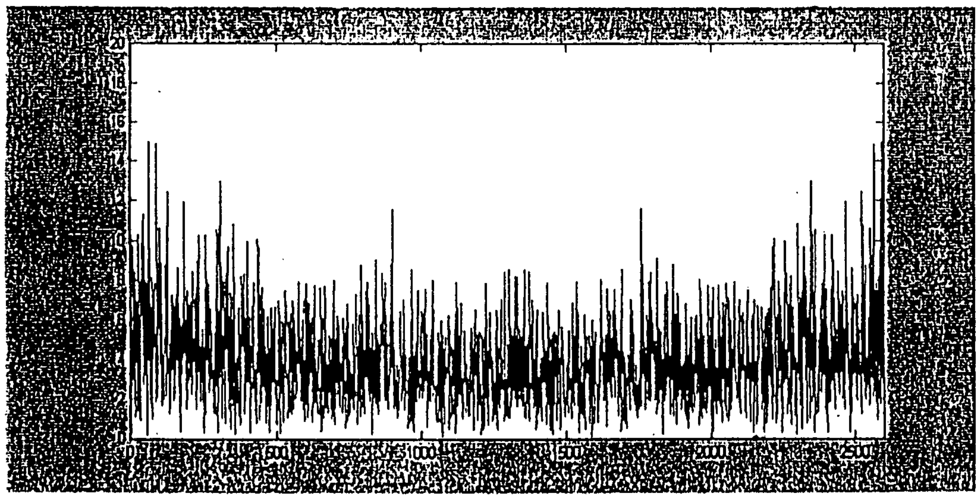
CORRECTION APPARATUS INPUT AFTER SUBTRACTING MEAN VALUE PER IDENTICAL HISTORY

FIG. 9



x(n) OF SAMPLE APPARATUS 1 WITH RESPECT TO OFFSET-x

FIG. 10



FREQUENCY SPECTRUM OF x(n)

FIG. 11

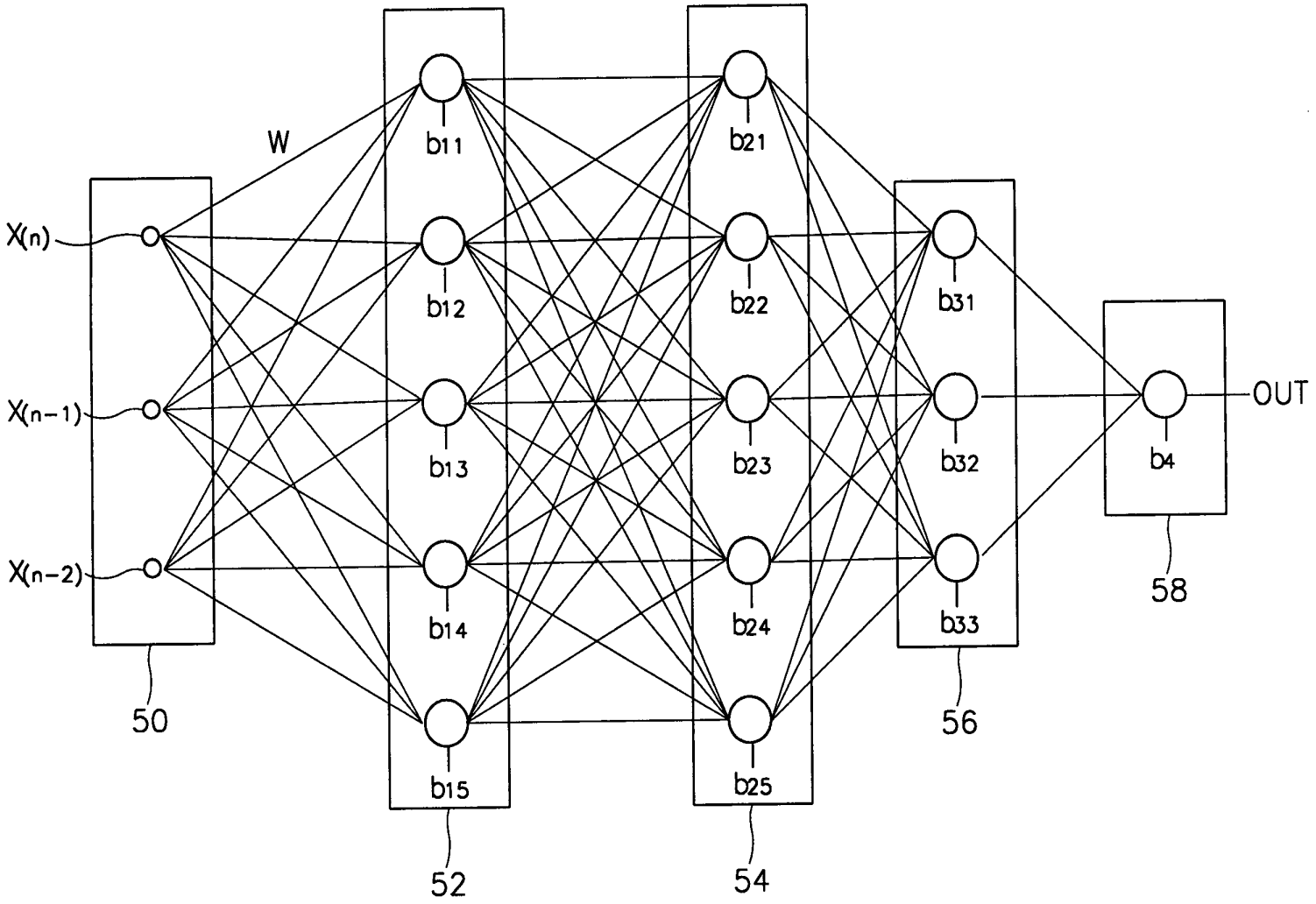

W
X(n)
X(n-1)
X(n-2)
b11
b12
b13
b14
b15
b21
b22
b23
b24
b25
b31
b32
b33
b4
OUT
50
52
54
56
58

FIG. 12

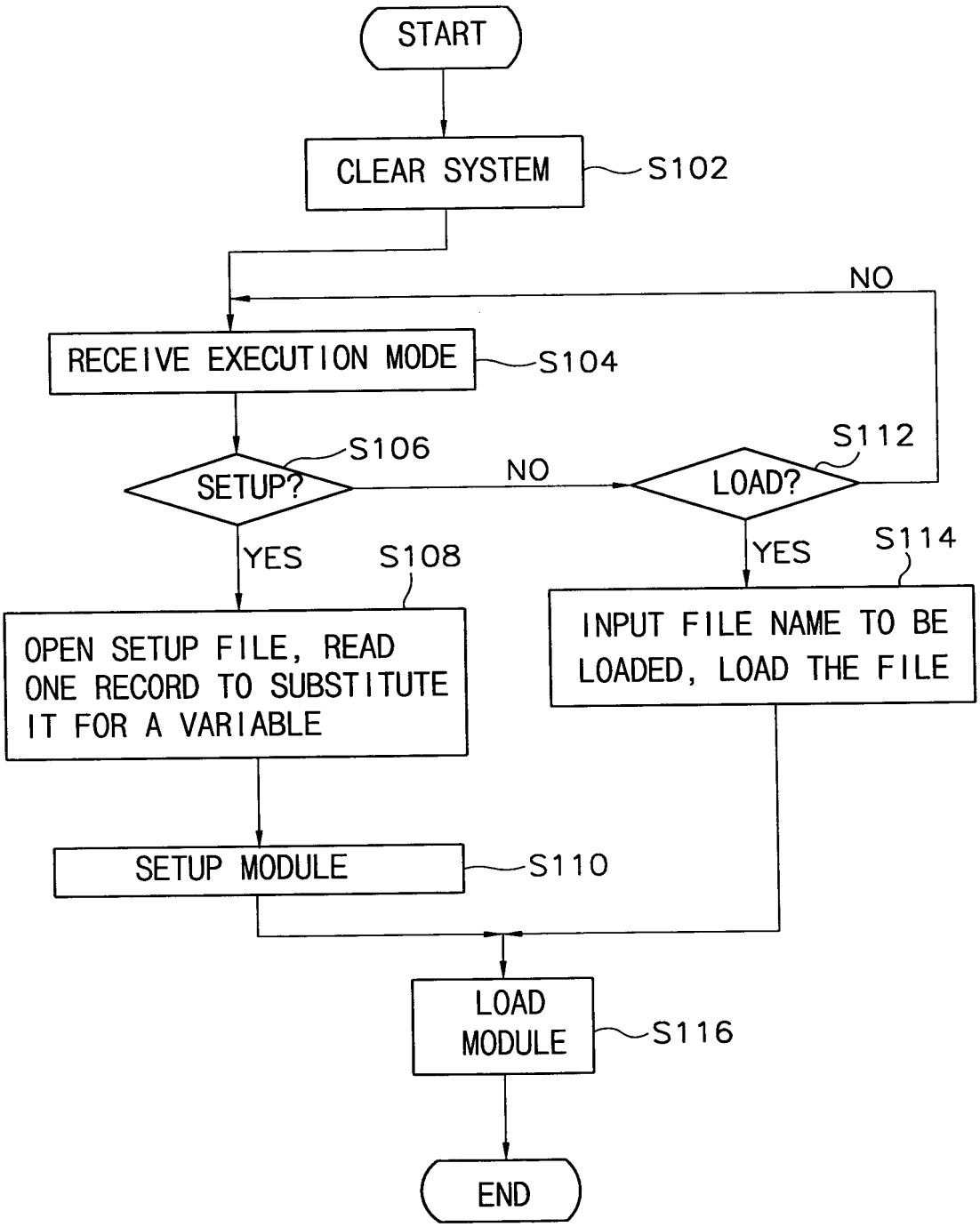

START
CLEAR SYSTEM
S102
NO
RECEIVE EXECUTION MODE
S104
S106
SETUP?
NO
S112
LOAD?
YES
S108
YES
S114
OPEN SETUP FILE, READ ONE RECORD TO SUBSTITUTE IT FOR A VARIABLE
INPUT FILE NAME TO BE LOADED, LOAD THE FILE
SETUP MODULE
S110
LOAD MODULE
S116
END

FIG. 13A

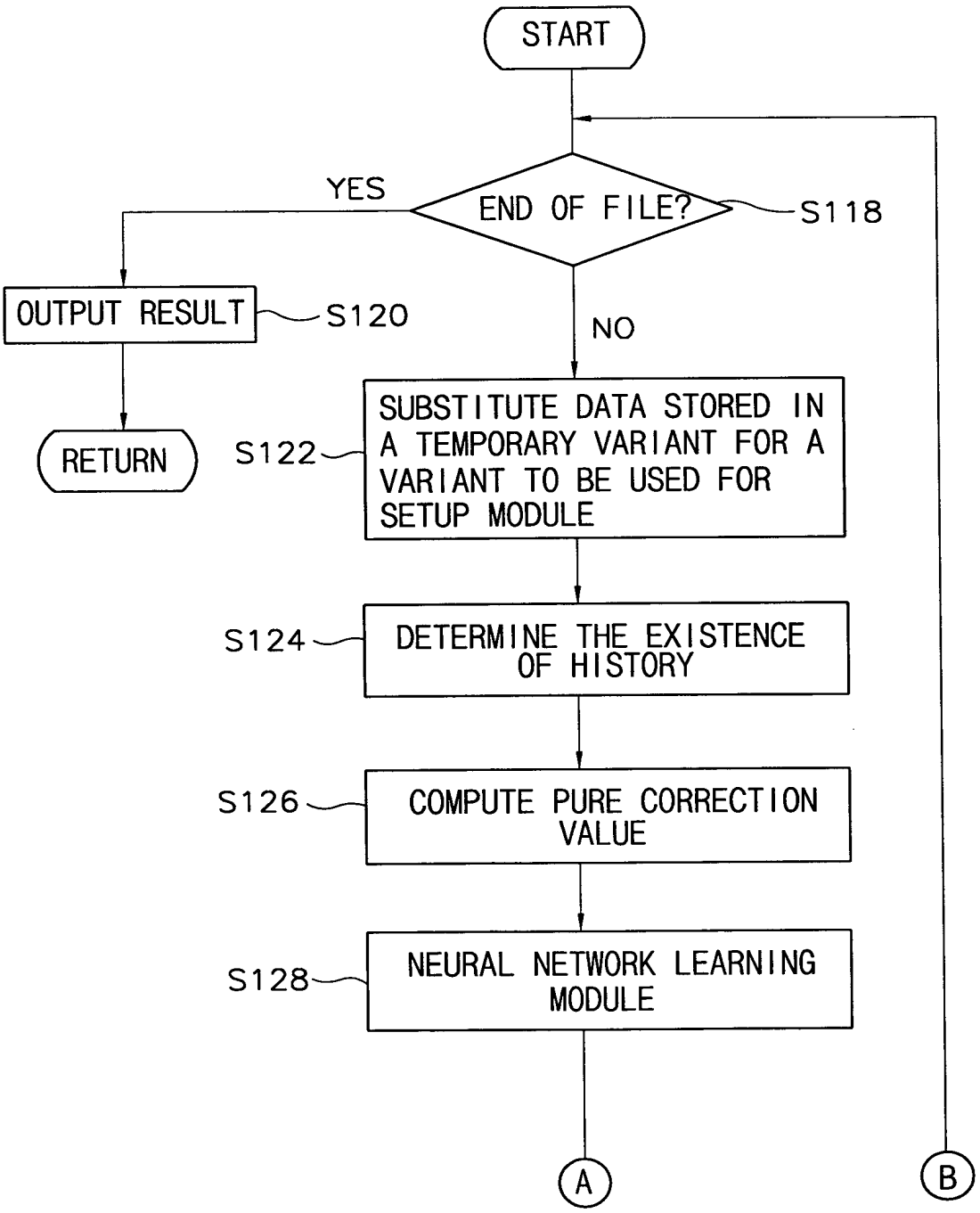

START
END OF FILE?
S118
YES
NO
OUTPUT RESULT
S120
RETURN
S122
SUBSTITUTE DATA STORED IN A TEMPORARY VARIANT FOR A VARIANT TO BE USED FOR SETUP MODULE
S124
DETERMINE THE EXISTENCE OF HISTORY
S126
COMPUTE PURE CORRECTION VALUE
S128
NEURAL NETWORK LEARNING MODULE
A
B

FIG. 13B

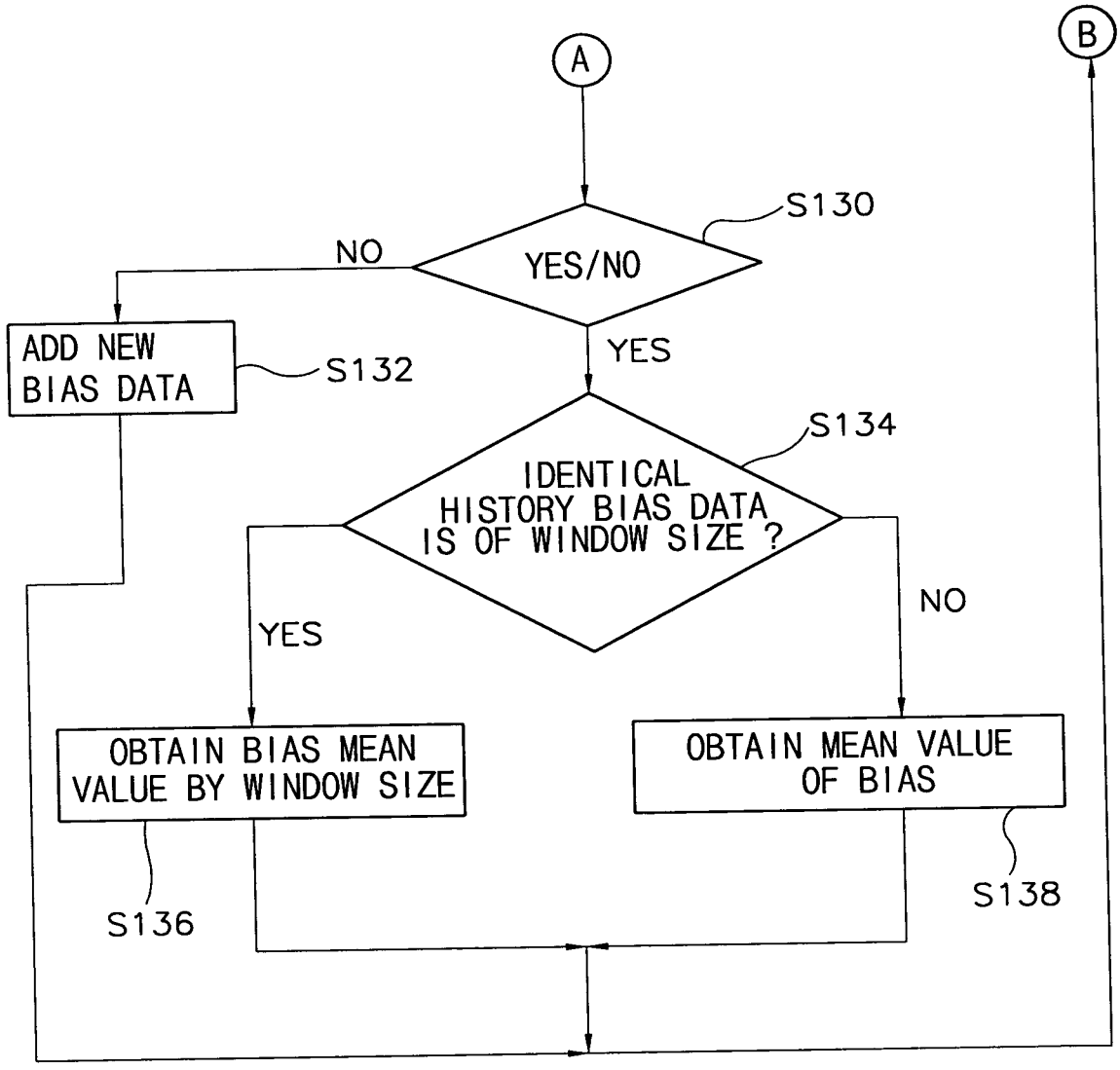

A
B
S130
YES/NO
NO
YES
ADD NEW BIAS DATA
S132
S134
IDENTICAL HISTORY BIAS DATA IS OF WINDOW SIZE ?
YES
NO
OBTAIN BIAS MEAN VALUE BY WINDOW SIZE
OBTAIN MEAN VALUE OF BIAS
S136
S138

FIG. 14

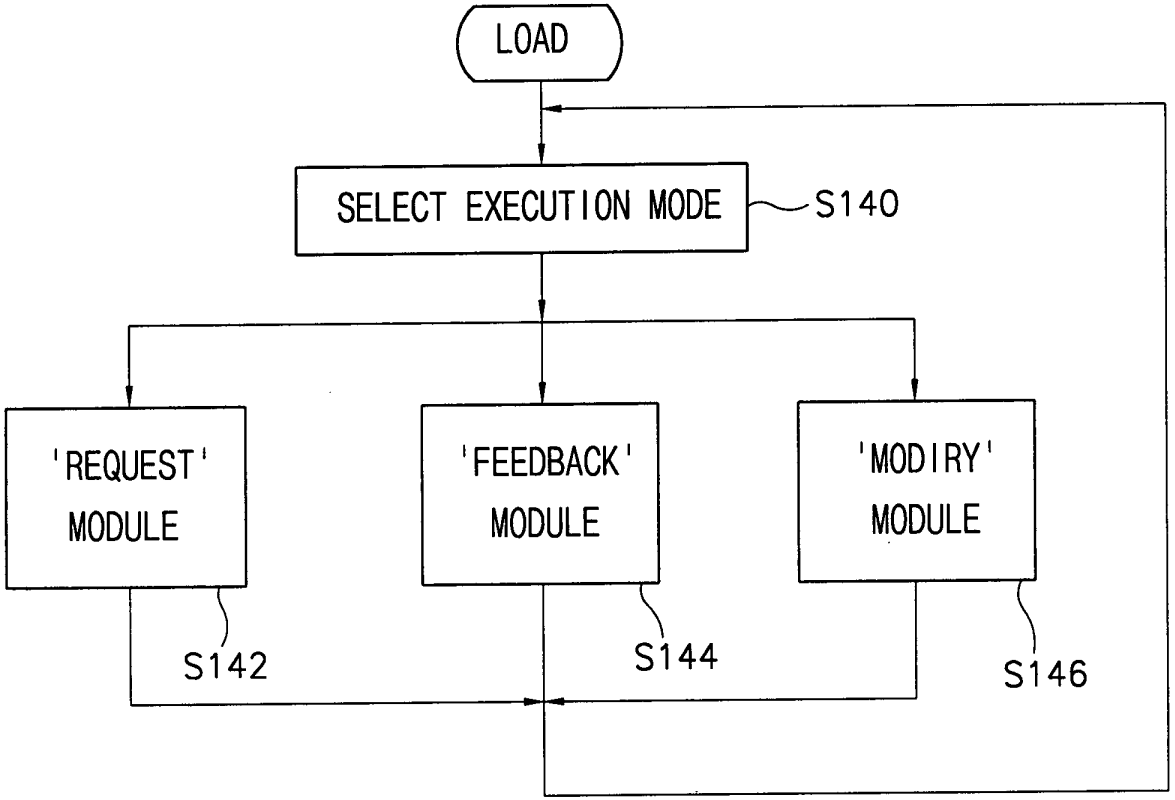

LOAD
SELECT EXECUTION MODE
S140
'REQUEST' MODULE
'FEEDBACK' MODULE
'MODIRY' MODULE
S142
S144
S146

FIG. 15

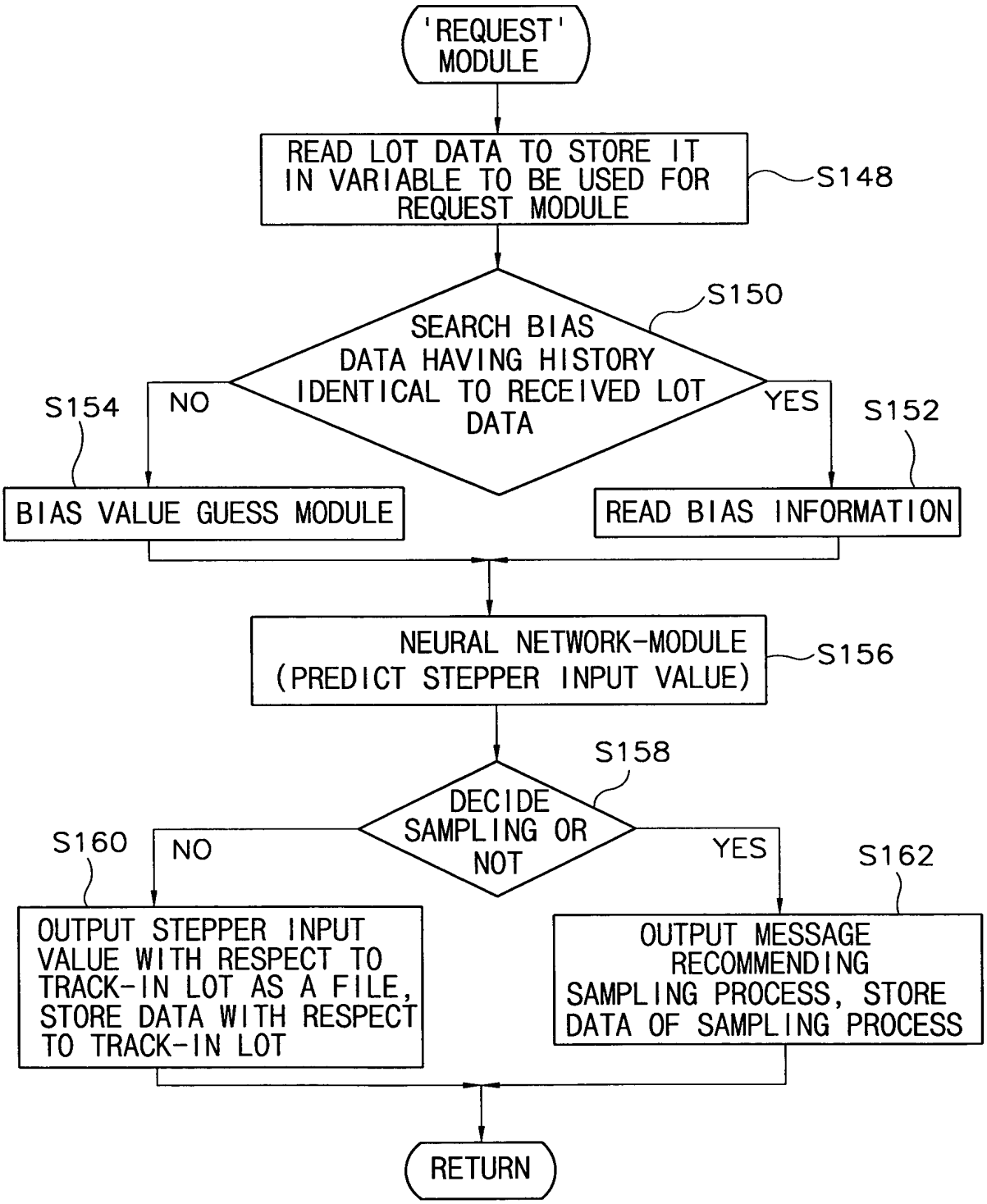

'REQUEST' MODULE
READ LOT DATA TO STORE IT IN VARIABLE TO BE USED FOR REQUEST MODULE
S148
SEARCH BIAS DATA HAVING HISTORY IDENTICAL TO RECEIVED LOT DATA
S150
NO
YES
S154
S152
BIAS VALUE GUESS MODULE
READ BIAS INFORMATION
NEURAL NETWORK-MODULE (PREDICT STEPPER INPUT VALUE)
S156
DECIDE SAMPLING OR NOT
S158
NO
YES
S160
S162
OUTPUT STEPPER INPUT VALUE WITH RESPECT TO TRACK-IN LOT AS A FILE, STORE DATA WITH RESPECT TO TRACK-IN LOT
OUTPUT MESSAGE RECOMMENDING SAMPLING PROCESS, STORE DATA OF SAMPLING PROCESS
RETURN

FIG. 16

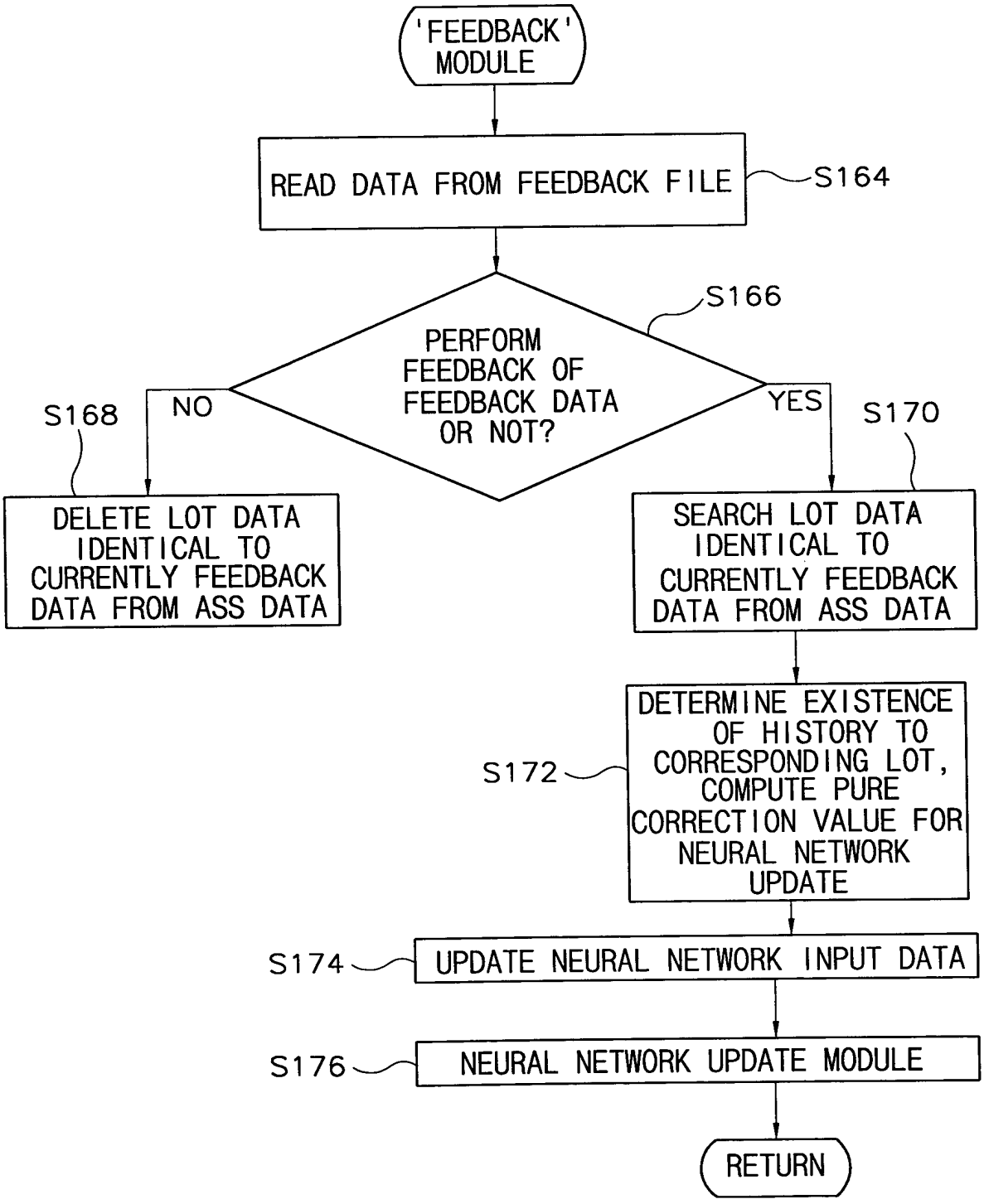

'FEEDBACK' MODULE
READ DATA FROM FEEDBACK FILE
S164
S166
PERFORM FEEDBACK OF FEEDBACK DATA OR NOT?
NO
YES
S168
S170
DELETE LOT DATA IDENTICAL TO CURRENTLY FEEDBACK DATA FROM ASS DATA
SEARCH LOT DATA IDENTICAL TO CURRENTLY FEEDBACK DATA FROM ASS DATA
S172
DETERMINE EXISTENCE OF HISTORY TO CORRESPONDING LOT, COMPUTE PURE CORRECTION VALUE FOR NEURAL NETWORK UPDATE
S174
UPDATE NEURAL NETWORK INPUT DATA
S176
NEURAL NETWORK UPDATE MODULE
RETURN

FIG. 17

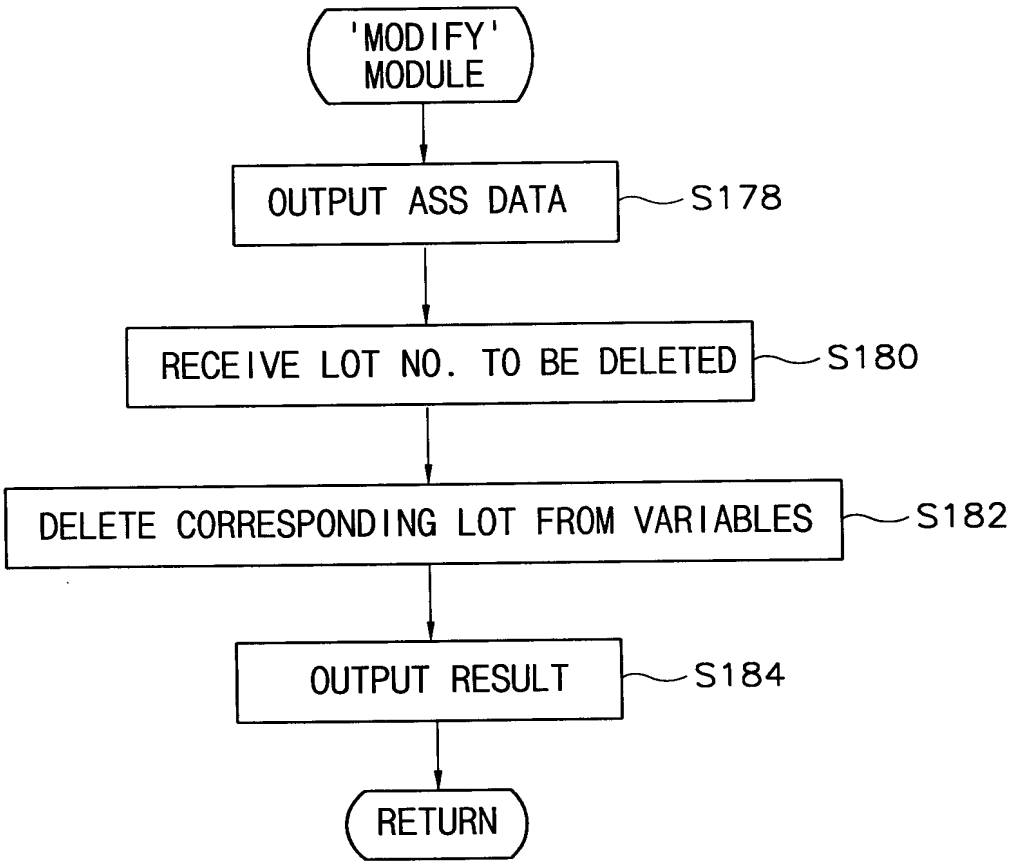

'MODIFY' MODULE
OUTPUT ASS DATA
S178
RECEIVE LOT NO. TO BE DELETED
S180
DELETE CORRESPONDING LOT FROM VARIABLES
S182
OUTPUT RESULT
S184
RETURN

FIG. 18A

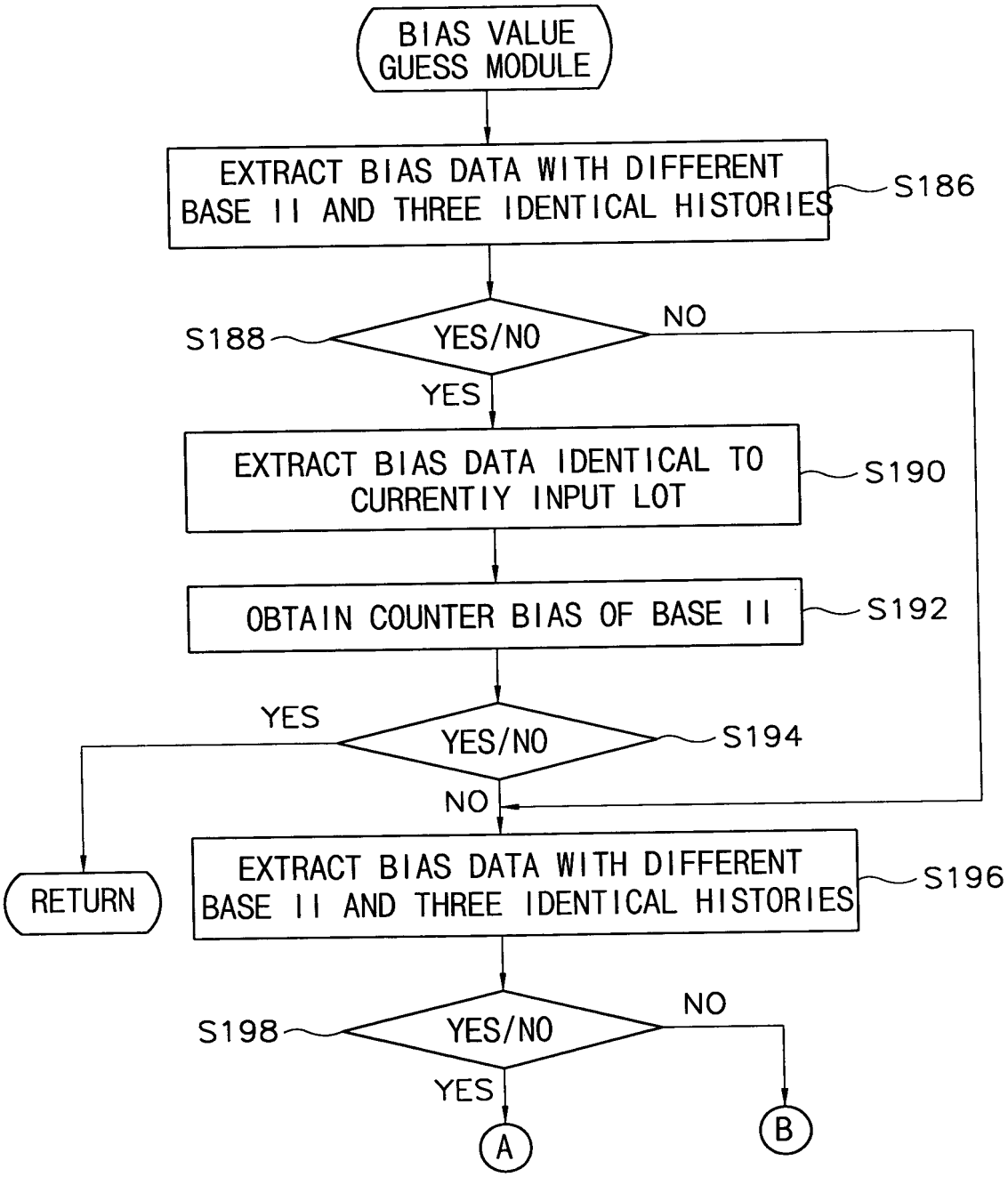

BIAS VALUE GUESS MODULE
EXTRACT BIAS DATA WITH DIFFERENT BASE II AND THREE IDENTICAL HISTORIES
S186
S188
YES/NO
NO
YES
EXTRACT BIAS DATA IDENTICAL TO CURRENTIY INPUT LOT
S190
OBTAIN COUNTER BIAS OF BASE II
S192
YES
YES/NO
S194
NO
RETURN
EXTRACT BIAS DATA WITH DIFFERENT BASE II AND THREE IDENTICAL HISTORIES
S196
S198
YES/NO
NO
YES
A
B

FIG. 18B

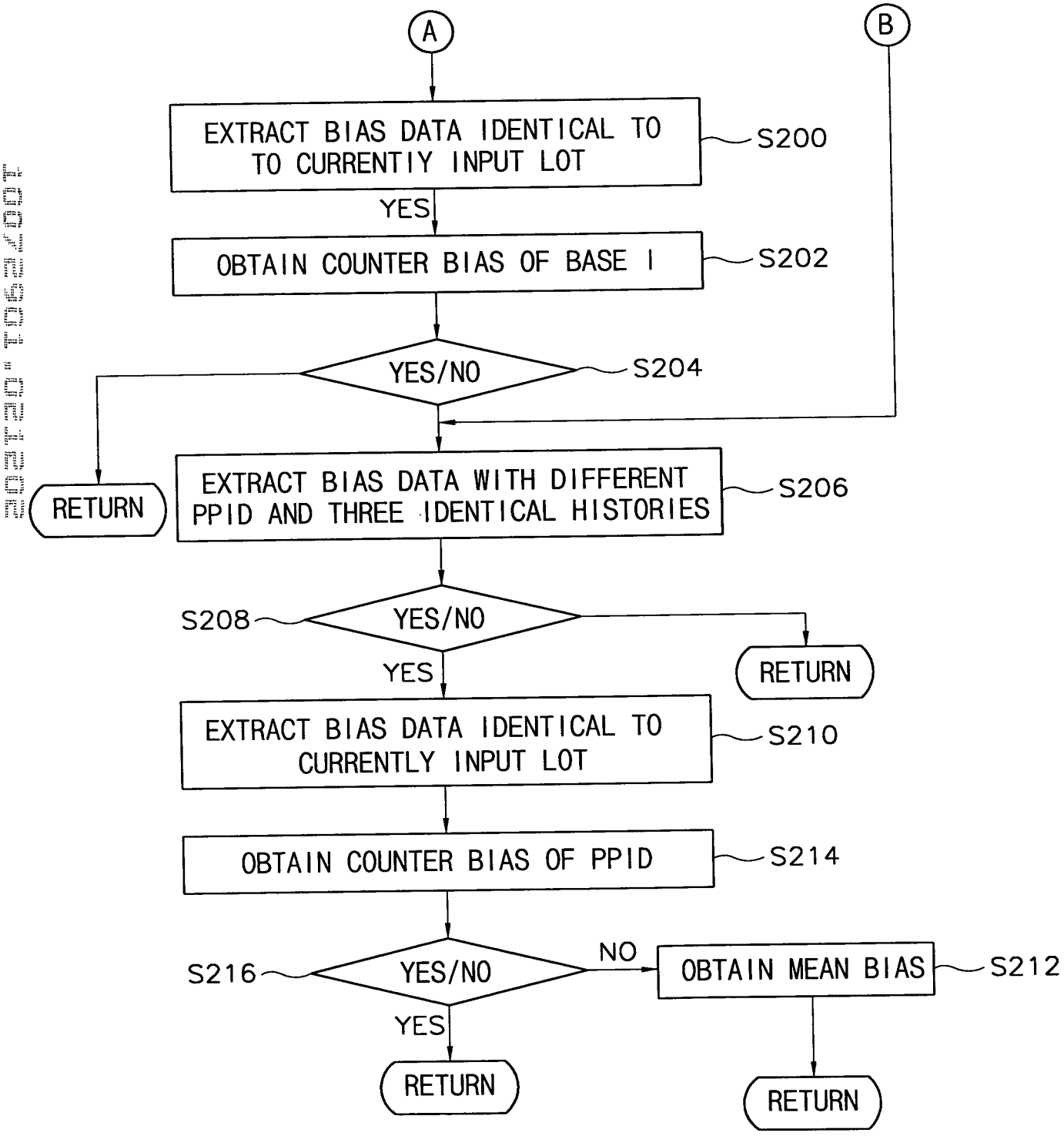

A
B
EXTRACT BIAS DATA IDENTICAL TO TO CURRENTIY INPUT LOT
S200
YES
OBTAIN COUNTER BIAS OF BASE I
S202
YES/NO
S204
RETURN
EXTRACT BIAS DATA WITH DIFFERENT PPID AND THREE IDENTICAL HISTORIES
S206
S208
YES/NO
RETURN
YES
EXTRACT BIAS DATA IDENTICAL TO CURRENTLY INPUT LOT
S210
OBTAIN COUNTER BIAS OF PPID
S214
S216
YES/NO
NO
OBTAIN MEAN BIAS
S212
YES
RETURN
RETURN

FIG. 19

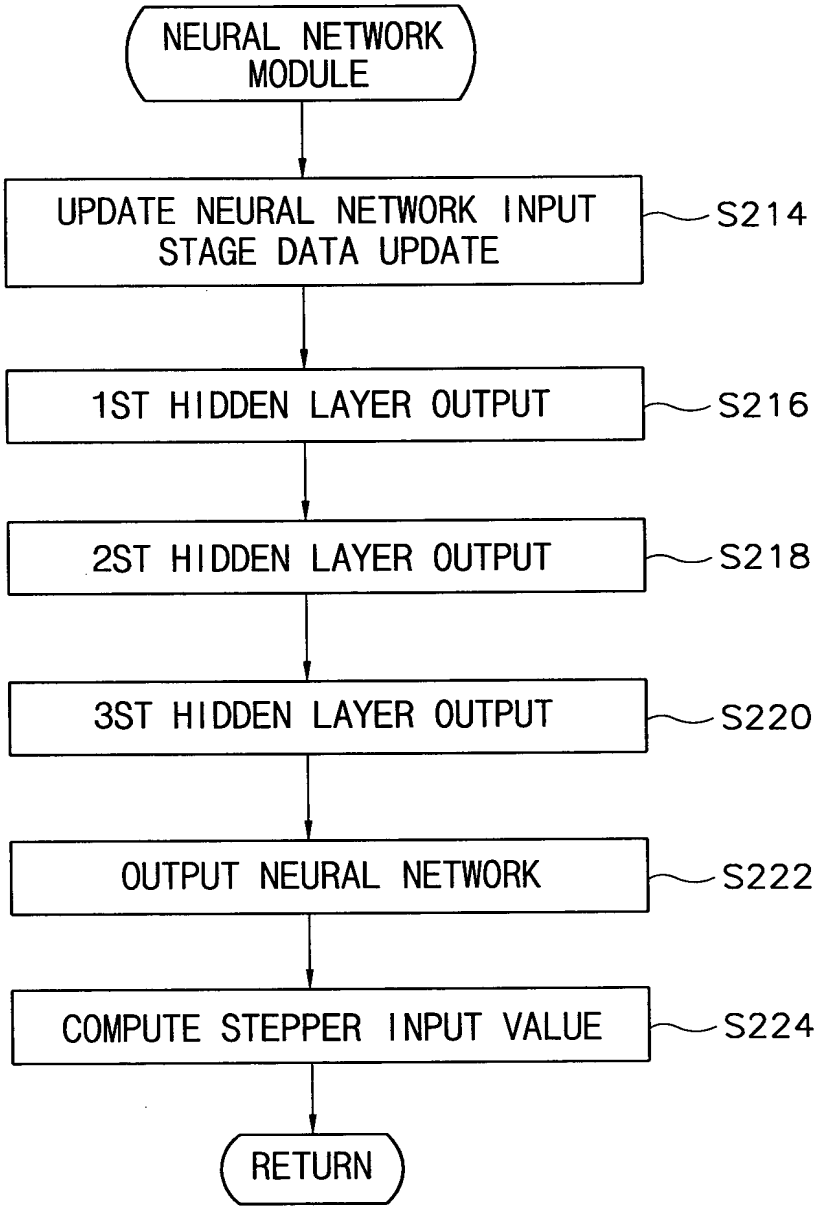

NEURAL NETWORK MODULE
UPDATE NEURAL NETWORK INPUT STAGE DATA UPDATE
S214
1ST HIDDEN LAYER OUTPUT
S216
2ST HIDDEN LAYER OUTPUT
S218
3ST HIDDEN LAYER OUTPUT
S220
OUTPUT NEURAL NETWORK
S222
COMPUTE STEPPER INPUT VALUE
S224
RETURN

FIG. 20

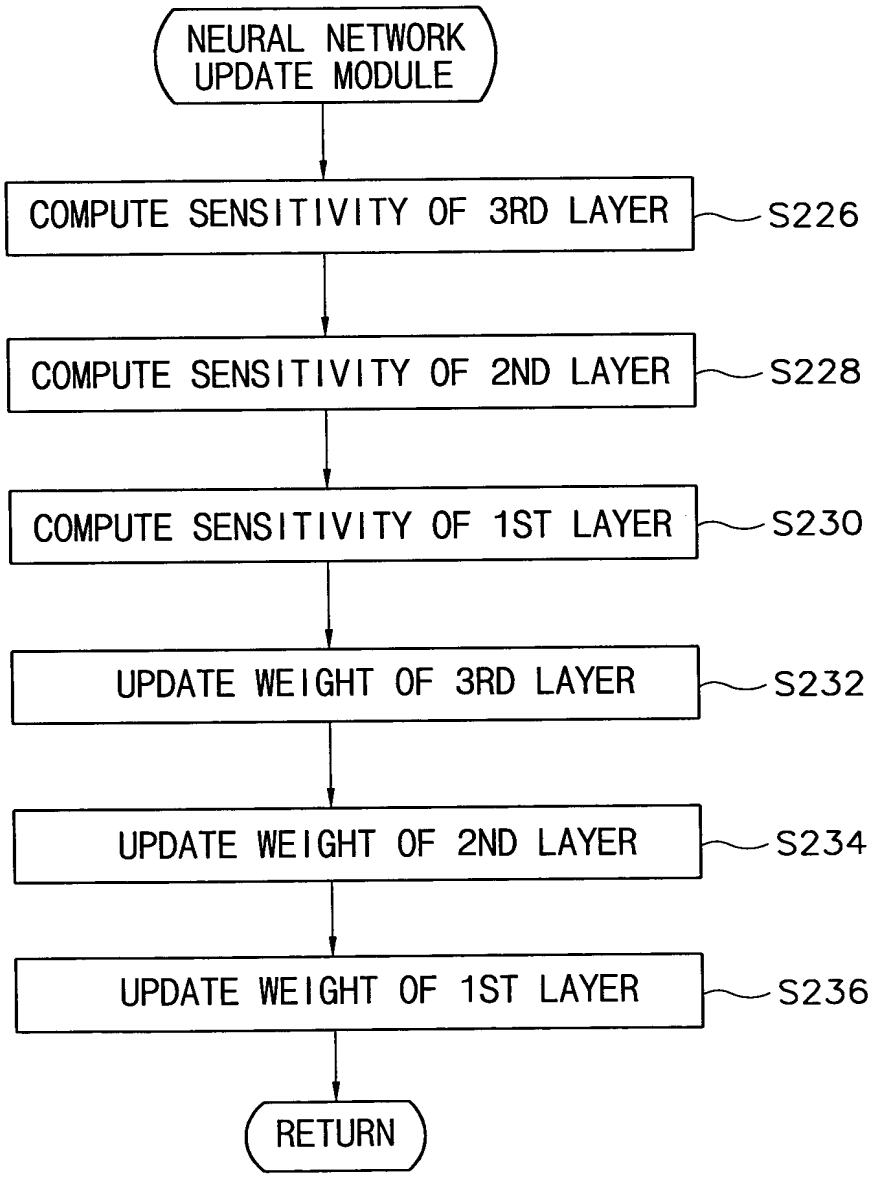
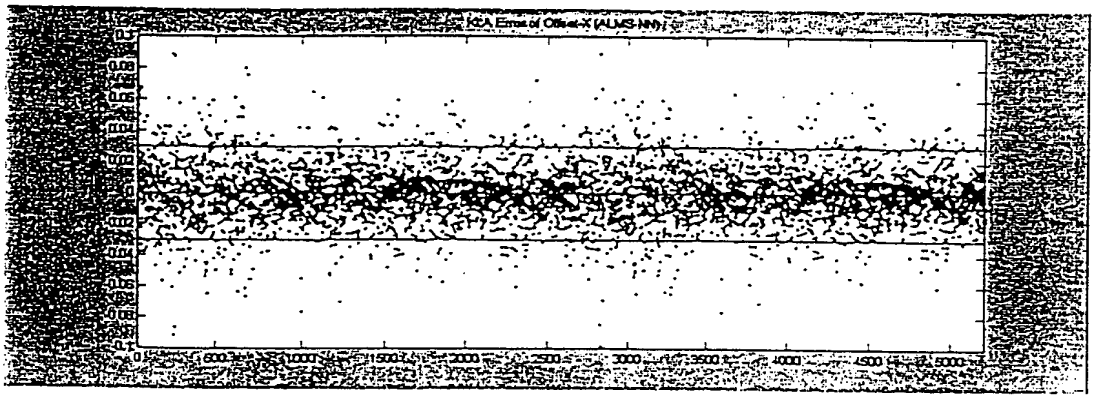
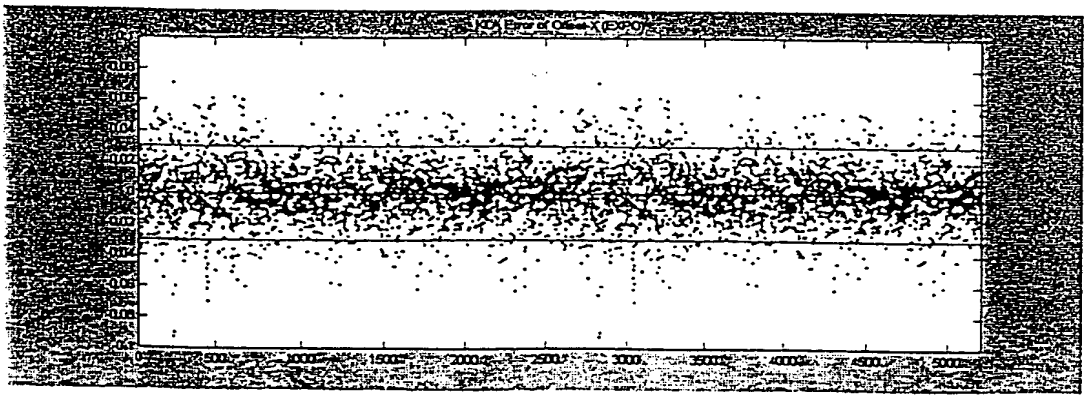

NEURAL NETWORK UPDATE MODULE
COMPUTE SENSITIVITY OF 3RD LAYER
S226
COMPUTE SENSITIVITY OF 2ND LAYER
S228
COMPUTE SENSITIVITY OF 1ST LAYER
S230
UPDATE WEIGHT OF 3RD LAYER
S232
UPDATE WEIGHT OF 2ND LAYER
S234
UPDATE WEIGHT OF 1ST LAYER
S236
RETURN

FIG. 21

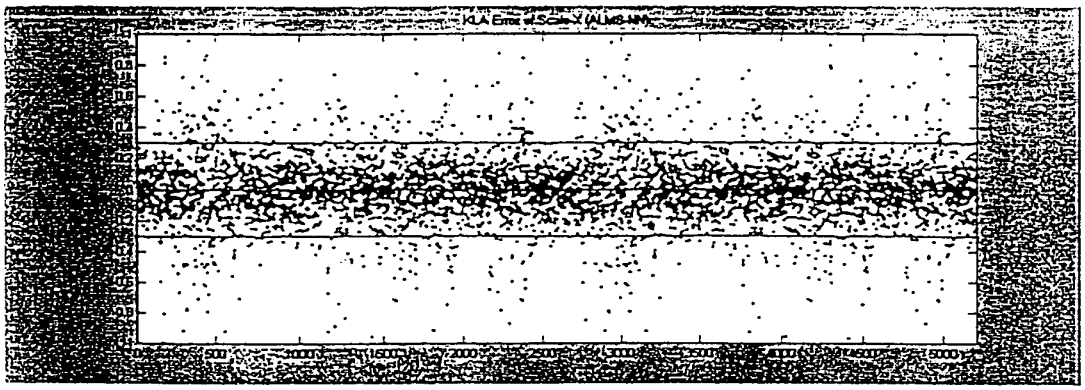


MEASUREMENT ERROR DISTRIBUTION OF MEASURER INSTRUMENT OF OFFSET-X (ALMS-NN)

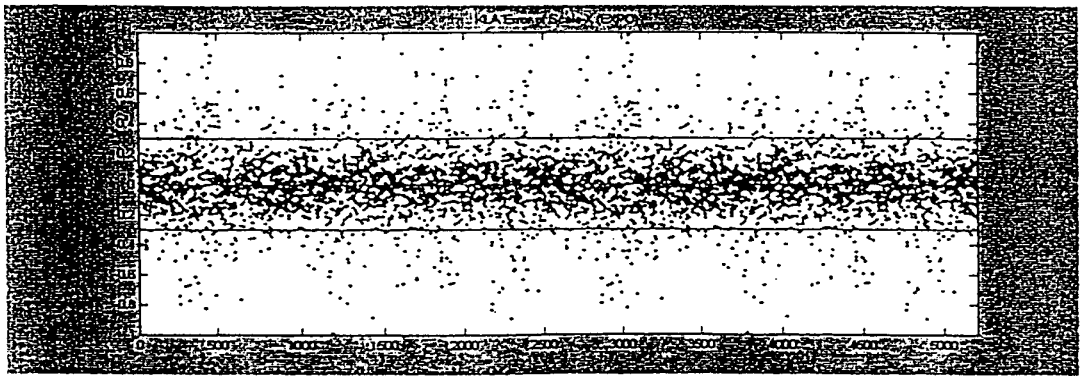


MEASUREMENT ERROR DISTRIBUTION OF MEASURER INSTRUMENT OF OFFSET-X (TRADITIONAL SYSTEM)

FIG. 22

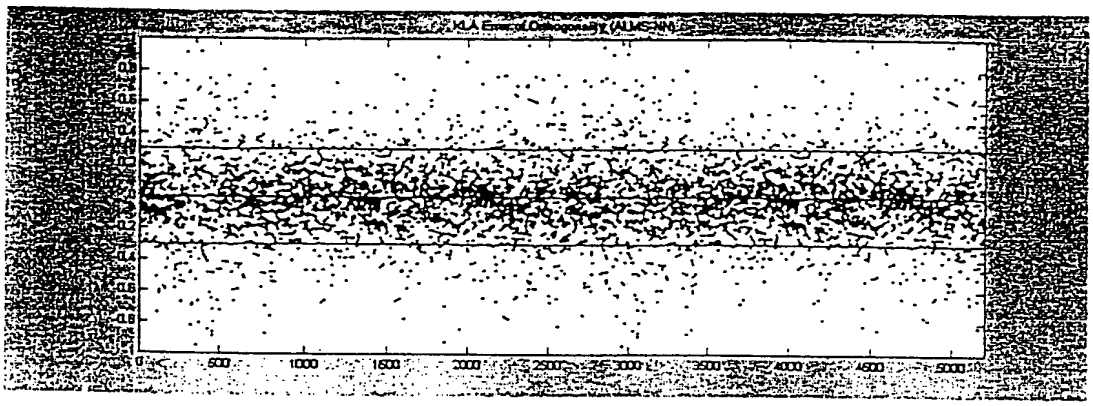


MEASUREMENT ERROR DISTRIBUTION OF MEASURER INSTRUMENT OF SCALE-X (ALMS-NN)

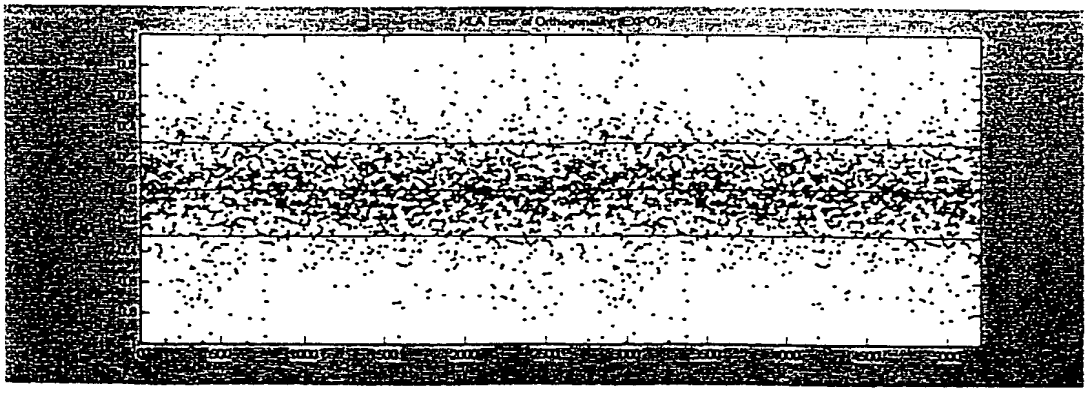


MEASUREMENT ERROR DISTRIBUTION OF MEASURER INSTRUMENT OF SCALE-X (TRADITIONAL SYSTEM)

FIG. 23

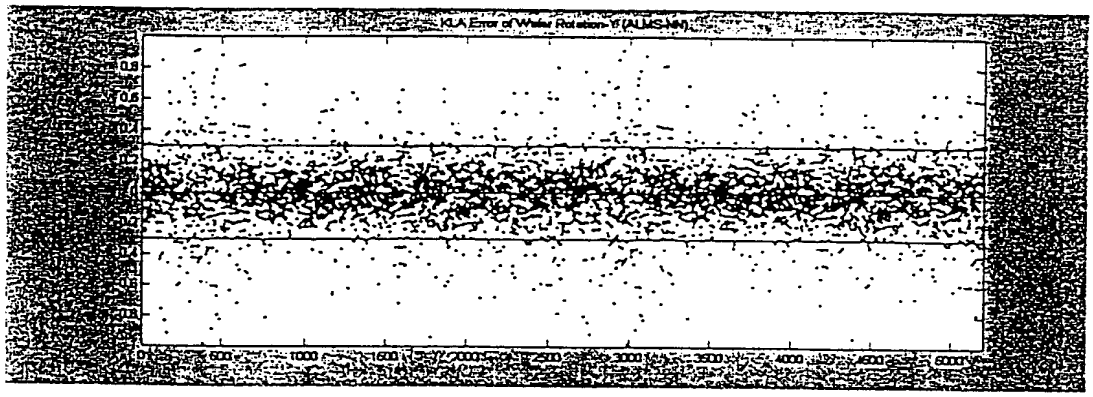


MEASUREMENT ERROR DISTRIBUTION OF MEASURER INSTRUMENT OF ORTHOGONALITY (ALMS-NN)

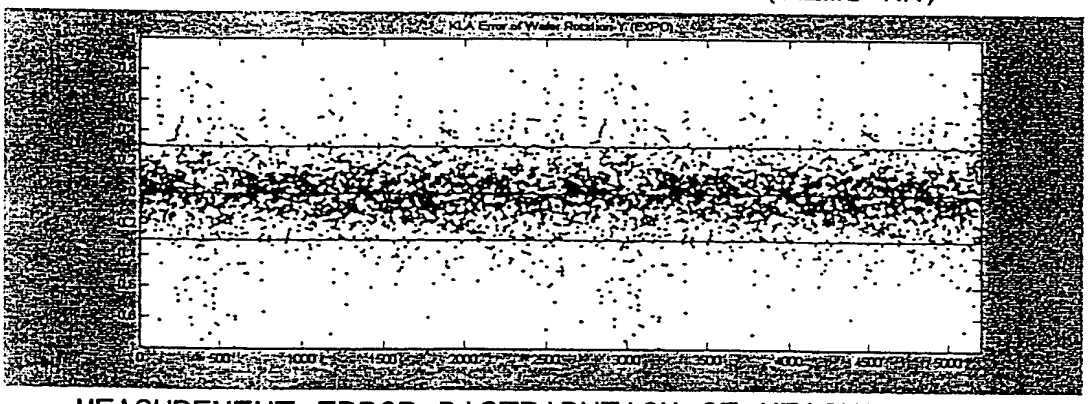


MEASUREMENT ERROR DISTRIBUTION OF MEASURER INSTRUMENT OF ORTHOGONALITY (TRADITIONAL SYSTEM)

FIG. 24

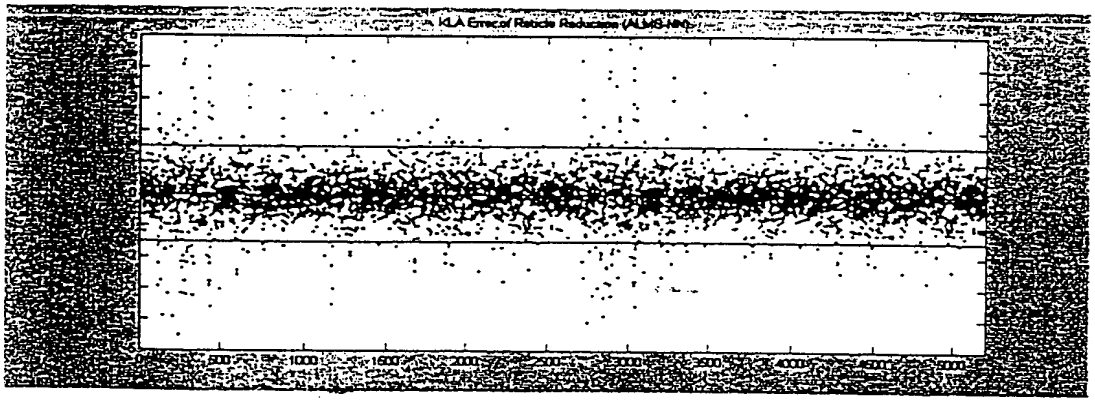


MEASUREMENT ERROR DISTRIBUTION OF MEASURER INSTRUMENT OF WAFER ROTATION-Y (ALMS-NN)

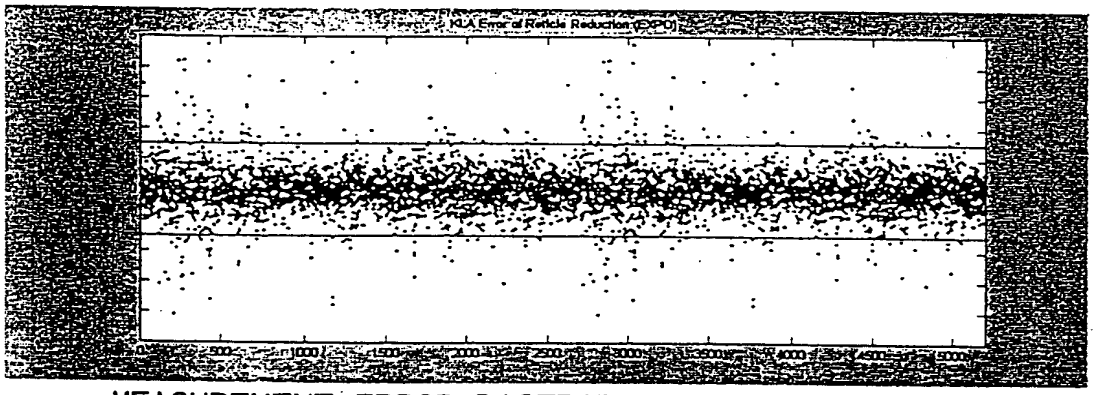


MEASUREMENT ERROR DISTRIBUTION OF MEASURER INSTRUMENT OF WAFER ROTATION-Y (TRADITIONAL SYSTEM)

FIG. 25

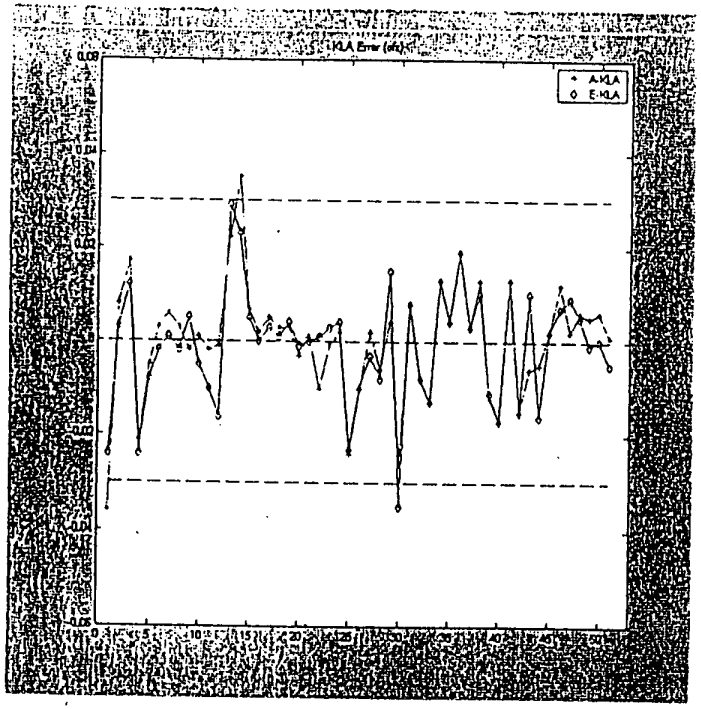


MEASUREMENT ERROR DISTRIBUTION OF MEASURER INSTRUMENT OF RETICLE REDUCTION (ALMS-NN)



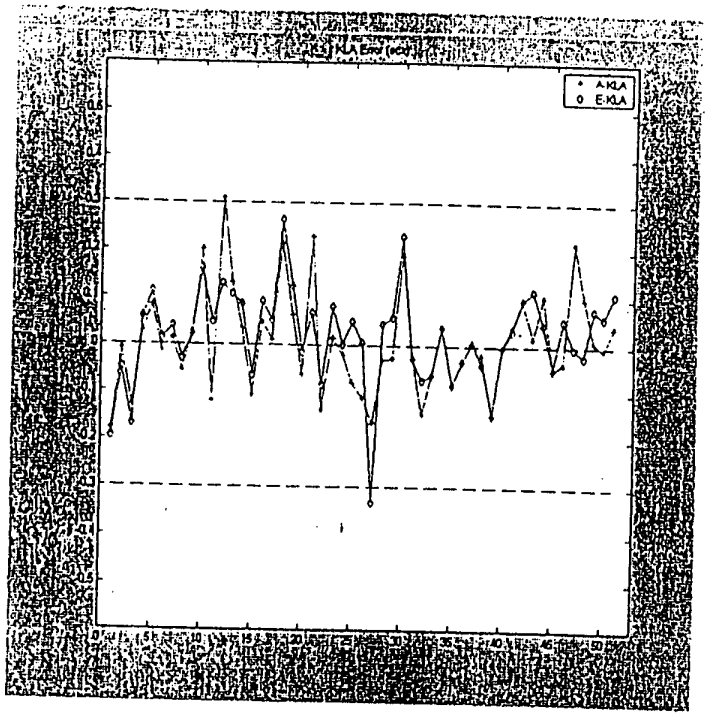
MEASUREMENT ERROR DISTRIBUTION OF MEASURER INSTRUMENT OF RETICLE REDUCTION (TRADITIONAL SYSTEM)

FIG. 26



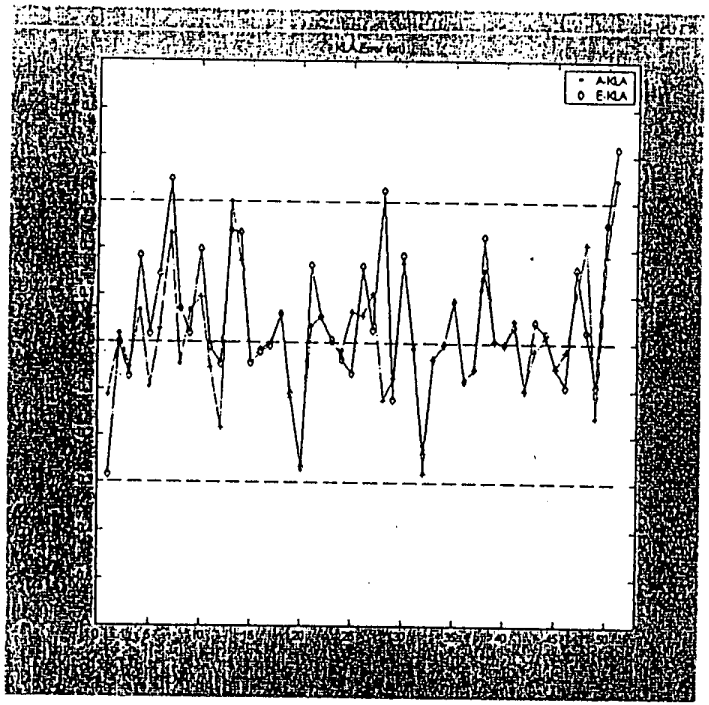
MEASUREMENT ERROR COMPARISON OF MEASURER INSTRUMENT OF OFFSET-X

FIG. 27



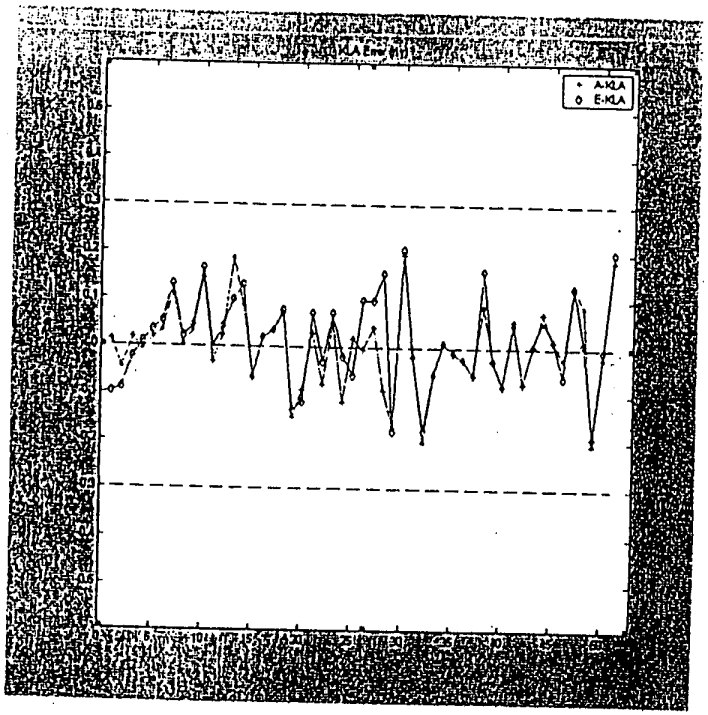
MEASUREMENT ERROR COMPARISON OF MEASURER INSTRUMENT OF SCALE-X

FIG. 28



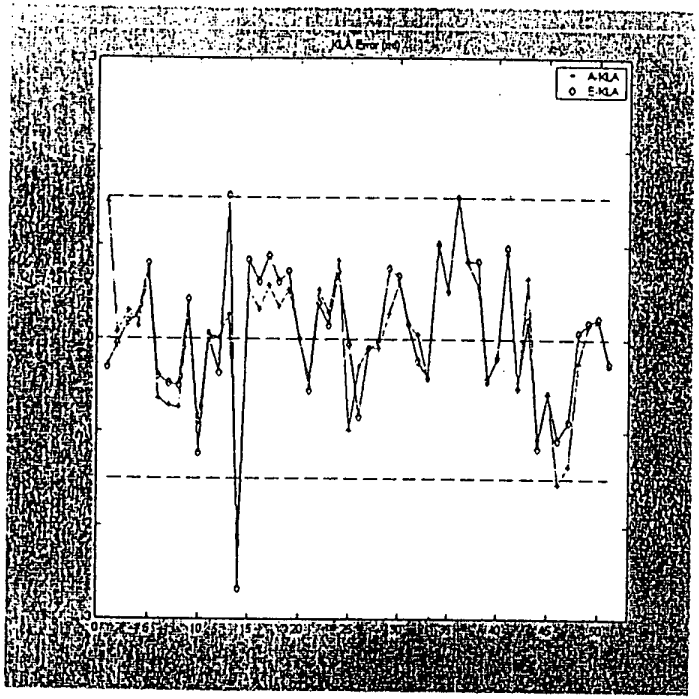
MEASUREMENT ERROR COMPARISON OF MEASURER INSTRUMENT OF ORTHOGONALITY

FIG. 29



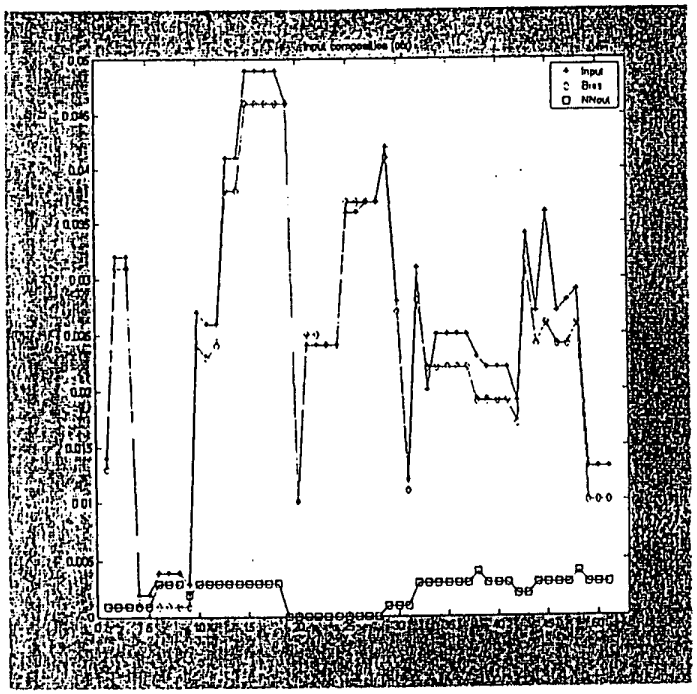
MEASUREMENT ERROR COMPARISON OF MEASURER INSTRUMENT OF WAFER ROTATION-Y

FIG. 30



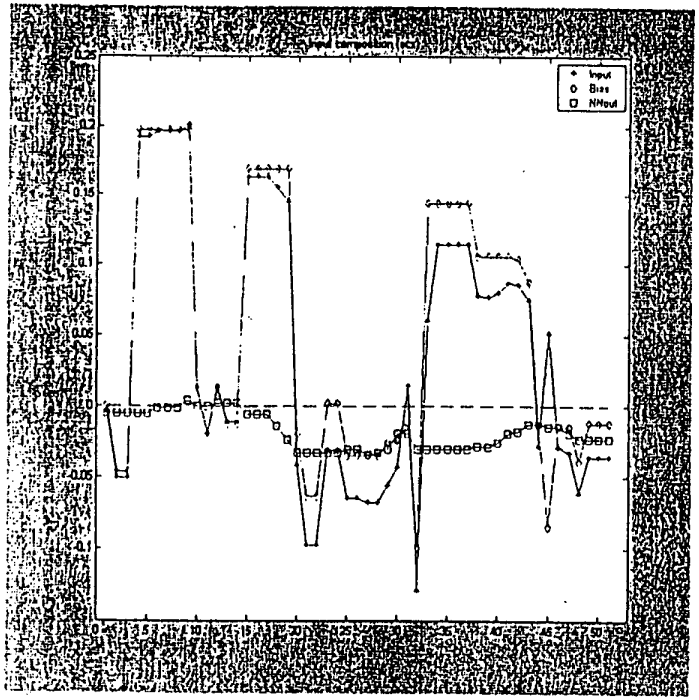
MEASUREMENT ERROR COMPARISON OF MEASURER INSTRUMENT OF RETICLE REDUCTION

FIG. 31



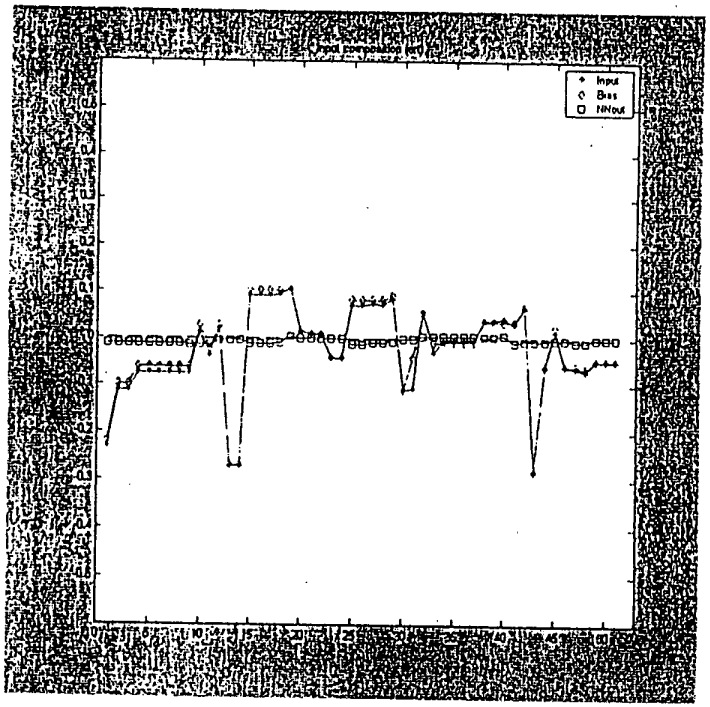
APPARATUS INPUT VALUE FORMAT OF OFFSET-X

FIG. 32



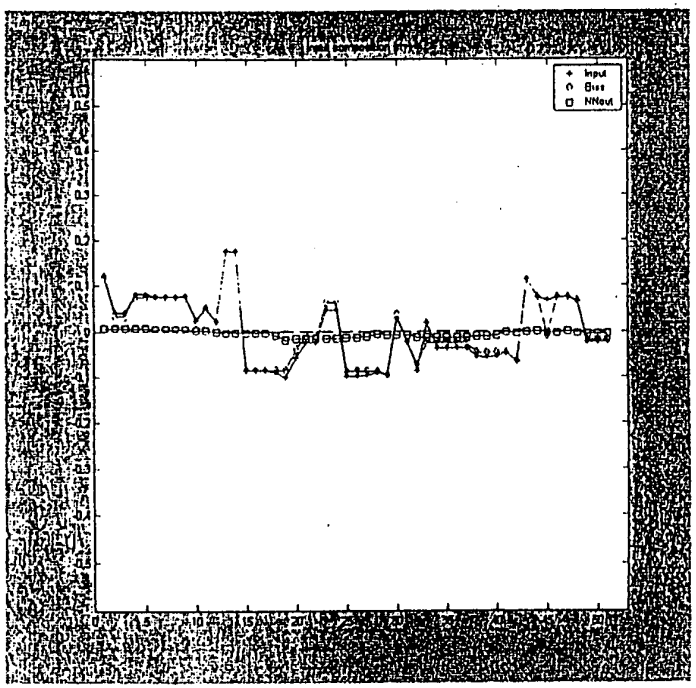
APPARATUS INPUT VALUE FORMAT OF SCALE-X

FIG. 33



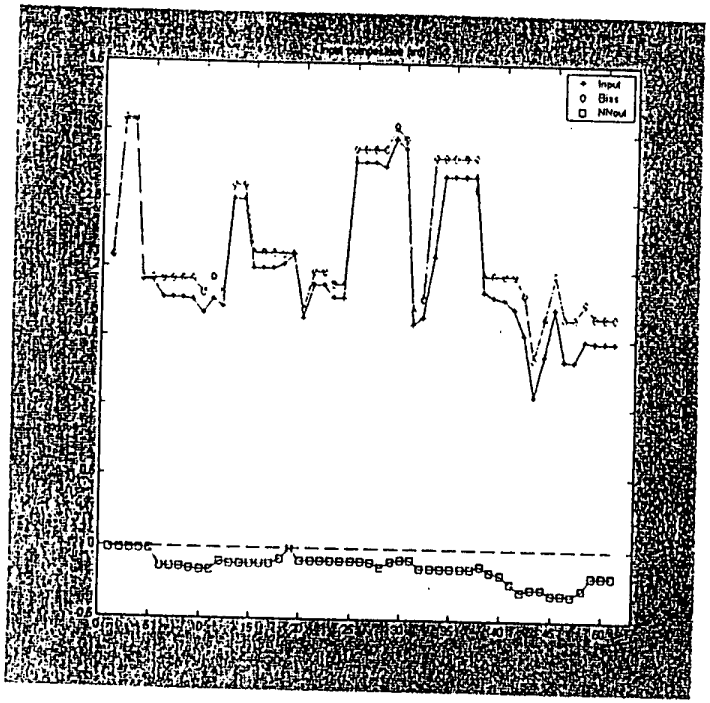
APPARATUS INPUT VALUE FORMAT OF ORTHOGONALITY

FIG. 34



APPARATUS INPUT VALUE FORMAT OF WAFER ROTATION-Y

FIG. 35



APPARATUS INPUT VALUE FORMAT OF RETICLE REDUCTION